

## CONTENTS

### Volume 30 Number 1

- |   |  |
|---|--|
| <b>A. Miltner and W. Zech</b>   | 1 Carbohydrate decomposition in beech litter as influenced by aluminium, iron and manganese oxides   |
| <b>Michael Stemmer,<br/>Martin H. Gerzabek<br/>and Ellen Kandeler</b>   | 9 Organic matter and enzyme activity in particle-size fractions of soils obtained after low-energy sonication  |
| <b>M. Pansu, Z. Sallih and P. Bottner</b>   | 19 Modelling of soil nitrogen forms after organic amendments under controlled conditions   |
| <b>J. P. Malone, R. J. Stevens<br/>and R. J. Laughlin</b>   | 31 Combining the $^{15}\text{N}$ and acetylene inhibition techniques to examine the effect of acetylene on denitrification   |
| <b>Qishui Zhang and John C. Zak</b>   | 39 Effects of water and nitrogen amendment on soil microbial biomass and fine root production in a semi-arid environment in West Texas   |
| <b>David R. Chadwick, Philip Ineson,<br/>Clive Woods and Trevor G. Pearce</b>   | 47 Decomposition of <i>Pinus sylvestris</i> litter in litter bags: influence of underlying native litter layer   |
| <b>Denis Curtin, C. A. Campbell<br/>and Abdul Jalil</b>   | 57 Effects of acidity on mineralization: pH-dependence of organic matter mineralization in weakly acidic soils   |
| <b>J. M. Moxley and K. A. Smith</b>   | 65 Factors affecting utilisation of atmospheric CO by soils  |
| <b>Luigi Chiarini, Annamaria Bevivino,<br/>Silvia Tabacchioni and<br/>Claudia Dalmastri</b>                                   | 81 Inoculation of <i>Burkholderia cepacia</i> , <i>Pseudomonas fluorescens</i> and <i>Enterobacter</i> sp. on <i>Sorghum bicolor</i> : root colonization and plant growth promotion of dual strain inocula |
| <b>V. Rasiah and B. D. Kay</b>  | 89 Legume N mineralization: effect of aeration and size distribution of water-filled pores   |
| <b>M. J. Vreeken-Buijs, J. Hassink<br/>and L. Brussaard</b>   | 97 Relationships of soil microarthropod biomass with organic matter and pore size distribution in soils under different land use   |
| <i>Short Communications</i>   |  |
| <b>G. W. McCarty, R. Siddaramappa<br/>and R. J. Wright</b>  | 107 Potential error associated with measurement of carbon mineralization in soil treated with coal combustion byproducts   |
| <b>M. A. Rao, A. Violante<br/>and L. Gianfreda</b>  | 111 Interactions between tannic acid and acid phosphatase  |
| <b>C. N. Bedrock, M. V. Cheshire,<br/>B. L. Williams, I. Solntseva,<br/>S. J. Chapman, J. A. Chudek<br/>and B. A. Goodman</b> | 113 Identification of nitrogenous components of fungal and bacterial origin immobilized in decomposing wheat straw by NMR spectroscopy using $^{15}\text{N}$ CPMAS   |
| <b>Book Review</b>  | 117  |

### Volume 30 Number 2

- |  |   |
|--|---|
| <b>Marie-Christine Dictor,<br/>Laurent Tessier and Guy Soulas</b>                      | 119 Reassessment of the $K_{ec}$ coefficient of the fumigation-extraction method in a soil profile                                |
| <b>S. L. Rogers, R. S. Kookana,<br/>D. P. Oliver and A. Richards</b>                   | 129 Microbial degradation of strychnine rodenticide in South Australian agricultural soils: laboratory studies                    |
| <b>J. S. Singh, A. S. Raghubanshi,<br/>V. S. Reddy, S. Singh and<br/>A. K. Kashyap</b> | 135 Methane flux from irrigated paddy and dryland rice fields, and from seasonally dry tropical forest and Savanna soils of India |
| <b>C. J. Koopmans, A. Tietema and<br/>J. M. Verstraten</b>                             | 141 Effects of reduced N deposition on litter decomposition and N cycling in two N saturated forests in The Netherlands           |

- Claudia Limmer and Harold L. Drake** 153 Effects of carbon, nitrogen, and electron acceptor availability on anaerobic N<sub>2</sub>-fixation in a beech forest soil
- A. R. Dyer, J. C. S. Fowler and G. H. Baker** 159 Detecting genetic variation in exotic earthworms, *Aporrectodea* spp. (Lumbricidae), in Australian soils using RAPD markers
- Rita de C. G. Mesquita, Sarah W. Workman and Constance L. Neely** 167 Slow litter decomposition in a *Cecropia*-dominated secondary forest of central Amazonia
- T. K. Adhya, P. Pattnaik, S. N. Satpathy, S. Kumaraswamy and N. Nethunathan** 177 Influence of phosphorus application on methane emission and production in flooded paddy soils
- Karin van Dijk and Eric B Nelson** 183 Inactivation of seed exudate stimulants of *Pythium ultimum* sporangium germination by biocontrol strains of *Enterobacter cloacae* and other seed-associated bacteria
- Wietse De Boer, Paulien J. A. Klein Gunnewiek, Petra Lafeber, Jaap D. Janse, Bendien E. Spit and Jan W. Woldendorp** 193 Anti-fungal properties of chitinolytic dune soil bacteria
- J. L. Chotte, J. N. Ladd and M. Amato** 205 Sites of microbial assimilation, and turnover of soluble and particulate <sup>14</sup>C-labelled substrates decomposing in a clay soil
- Josef H. Görres, Marnie J. Dichiaro, Jodi B. Lyons and José A. Amador** 219 Spatial and temporal patterns of soil biological activity in a forest and an old field
- Jon E. Lindstrom, Ronald P. Barry and Joan F. Braddock** 231 Microbial community analysis: a kinetic approach to constructing potential C source utilization patterns
- Barbara A. Handley, Alan J. Hedges and John E. Beringer** 241 Importance of host plants for detecting the population diversity of *Rhizobium leguminosarum* biovar *viciae* in soil
- G. Puri and M. R. Ashman** 251 Relationship between soil microbial biomass and gross N mineralisation
- David C. Thompson, Donald Y. Kobayashi and Bruce B. Clarke** 257 Suppression of summer patch by rhizosphere competent bacteria and their establishment on Kentucky bluegrass
- R.-A. Sandaa, Ø. Enger and V. Torsvik** 265 Rapid method for fluorometric quantification of DNA in soil
- Short Communication*  
**W. T. Frankenberger Jr.** 269 Effects of trace elements on arsenic volatilization

### Volume 30 Number 3

- Mary C. Savin and José A. Amador** 275 Biodegradation of norflurazon in a bog soil
- P. J. A. Howard, D. M. Howard and L. E. Lowe** 285 Effects of tree species and soil physico-chemical conditions on the nature of soil organic matter
- Susumu Asakawa, Masayo Akagawa-Matsushita, Yosuke Koga and Koichi Hayano** 299 Communities of methanogenic bacteria in paddy field soils with long-term application of organic matter
- M. P. Bernal, A. F. Navarro, M. A. Sánchez-Monedero, A. Roig and J. Cegarra** 305 Influence of sewage sludge compost stability and maturity on carbon and nitrogen mineralization in soil
- B. S. Griffiths, K. Ritz, N. Ebbelwhite, E. Paterson and K. Killham** 315 Ryegrass/rhizosphere microbial community structure under elevated carbon dioxide concentrations, with observations on wheat rhizosphere

- Kyoko Ikeda, Koki Toyota and Makoto Kimura
- Shengjun Lu, Kim G. Mattson, Joe B. Zaerr and John D. Marshall
- N. Z. Lupwayi and I. Haque
- Cecilia Palmberg, Anders Nordgren and Erland Bååth
- S. Ellis, M. T. Howe, K. W. T. Goulding, M. A. Mugglestone and L. Dendooven
- Susan J. Grayston, Shenquiang Wang, Colin D. Campbell and Anthony C. Edwards
- Anita Pandey, Eklabya Sharma and Lok Man S. Palni
- Christoph Schwarzer, Bernhard Auer, Jörg Klima and Kurt Haselwandter
- B. Stenberg, M. Johansson, M. Pell, K. Sjö Dahl-Svensson, J. Stenström and L. Torstensson
- Barry R. Taylor
- R. A. Wilson, B. A. Handley and J. E. Beringer
- A. Saá, M. C. Trasar-Cepeda and T. Carballas
- Short Communication*  
K. D. Stephen, J. R. M. Arah, K. L. Thomas, J. Benstead and D. Lloyd
- 323 Role of extracellular pectinases in the rhizoplane competence of a rhizobacterium *Burkholderia pickettii* MSP3Rif
- 331 Root respiration of Douglas-fir seedlings: effects of N concentration
- 337 Mineralization of N, P, K, Ca and Mg from *Sesbania* and *Leucaena* leaves varying in chemical composition
- 345 Multivariate modelling of soil microbial variables in forest soil contaminated by heavy metals using wet chemical analyses and pyrolysis GC/MS
- 359 Carbon and nitrogen dynamics in a grassland soil with varying pH: effect of pH on the denitrification potential and dynamics of the reduction enzymes
- 369 Selective influence of plant species on microbial diversity in the rhizosphere
- 379 Influence of bacterial inoculation on maize in upland farming systems of the Sikkim Himalaya
- 385 Physiological and electron microscopical investigations on syntrophic dicyandiamide degradation by soil bacteria
- 393 Microbial biomass and activities in soil as affected by frozen and cold storage
- 403 Air-drying depresses rates of leaf litter decomposition
- 413 Bacteriocin production and resistance in a field population of *Rhizobium leguminosarum* biovar *viciae*
- 419 Soil P status and phosphomonoesterase activity of recently burnt and unburnt soil following laboratory incubation
- 429 Gas diffusion coefficient profile in peat determined by modelling mass spectrometric data: implications for gas phase distribution

#### Volume 30 Number 4

- Monika Gödde and Ralf Conrad
- B. L. Candole and C. S. Rothrock
- Eli Zaady, Peter Groffman and Moshe Shachak
- L. J. Sanger, P. Cox, P. Splatt, M. Whelan and J. M. Anderson
- C. Crecchio and G. Stotzky
- H. Tapp and G. Stotzky
- 433 Simultaneous measurement of nitric oxide production and consumption in soil using a simple static incubation system, and the effect of soil water content on the contribution of nitrification
- 443 Using marked strains to assess the effect of hairy vetch amendment on the inoculum densities of *Thielaviopsis basicola*, *Pythium ultimum* and *Rhizoctonia solani*
- 449 Nitrogen fixation in macro- and microphytic patches in the Negev desert
- 455 Variability in the quality and potential decomposability of *Pinus sylvestris* litter from sites with different soil characteristics: acid detergent fibre (ADF) and carbohydrate signatures
- 463 Insecticidal activity and biodegradation of the toxin from *Bacillus thuringiensis* subsp. *kurstaki* bound to humic acids from soil
- 471 Persistence of the insecticidal toxin from *Bacillus thuringiensis* subsp. *kurstaki* in soil



- A. Smolander, O. Priha,  
L. Paavolainen, J. Steer  
and E. Mälkönen
- S. Yamulki, S. C. Jarvis and P. Owen
- K. D. Stephen, J. R. M. Arah,  
W. Daulat and R. S. Clymo
- Inko Arth, Peter Frenzel and  
Ralf Conrad
- Urs Simmen and Ulrich Gisi
- K. Jayachandran, N. B. Stolpe,  
T. B. Moorman and P. J. Shea
- R. D. Bardgett, S. Keiller, R. Cook  
and A. S. Gilburn
- Short Communications*
- R. J. Stevens, R. J. Laughlin and  
J. P. Malone
- Rasmus N. Jørgensen,  
Bodil J. Jørgensen and  
Niels E. Nielsen
- 477 Nitrogen and carbon transformations before and after clear-cutting  
in repeatedly N-fertilized and limed forest soil
- 491 Nitrous oxide emissions from excreta applied in a simulated grazing  
pattern
- 501 Root-mediated gas transport in peat determined by argon diffusion
- 509 Denitrification coupled to nitrification in the rhizosphere of rice
- 517 Uptake of  $^{14}\text{C}$ -SAN 789 F and  $^{14}\text{C}$ -cyproconazole into germinating  
wheat following seed treatment at different soil matric potentials
- 523 Application of  $^{14}\text{C}$ -most-probable-number technique to enumerate  
atrazine-degrading microorganisms in soil
- 531 Dynamic interactions between soil animals and microorganisms in  
upland grassland soils amended with sheep dung: a microcosm  
experiment
- 541 Measuring the mole fraction and source of nitrous oxide in the field
- 545  $\text{N}_2\text{O}$  emission immediately after rainfall in a dry stubble field

### Volume 30 Number 5

- K. Haron, P. C. Brookes,  
J. M. Anderson and Z. Z. Zakaria
- V. L. Barbosa-Jefferson, F. J. Zhao,  
S. P. McGrath and N. Magan
- T. Mueller, L. S. Jensen,  
N. E. Nielsen and J. Magid
- Donald A. Klein, Mark W. Paschke  
and Edward F. Redente
- M. M. Coûteaux, K. B. McTiernan,  
B. Berg, D. Szuberla, P. Dardenne  
and P. Bottner
- P. Bottner, F. Austrui, J. Cortez,  
G. Billès and M. M. Coûteaux
- Tommy Harder Nielsen and  
Niels Peter Revsbech
- Joseph Troxler, Marcello Zala,  
Andreas Natsch, Jakob Nievergelt,  
Christoph Keel and  
Geneviève Défago
- Sigrun Dahlin and Ernst Witter
- C. Abadie, V. Edel and  
C. Alabouvette
- H. Keith
- 547 Microbial biomass and soil organic matter dynamics in oil palm  
(*Elaeis guineensis* jacq.) plantations, West Malaysia
- 553 Thiosulphate and tetrathionate oxidation in arable soils
- 561 Turnover of carbon and nitrogen in a sandy loam soil following  
incorporation of chopped maize plants, barley straw and blue grass  
in the field
- 573 Assessment of fungal-bacterial development in a successional  
shortgrass steppe by direct integration of chloroform-fumigation  
extraction (FE) and microscopically derived data
- 583 Chemical composition and carbon mineralisation potential of Scots  
pine needles at different stages of decomposition
- 597 Decomposition of  $^{14}\text{C}$ - and  $^{15}\text{N}$ -labelled plant material, under  
controlled conditions, in coniferous forest soils from a north-south  
climatic sequence in western Europe
- 611 Nitrification, denitrification, and N-liberation associated with two  
types of organic hot-spots in soil
- 621 Transport of a biocontrol *Pseudomonas fluorescens* through 2.5-M  
deep outdoor lysimeters and survival in the effluent water
- 633 Can the low microbial biomass C-to-organic C ratio in an acid and a  
metal contaminated soil be explained by differences in the substrate  
utilization efficiency and maintenance requirements?
- 643 Soil suppressiveness to fusarium wilt: influence of a cover-plant on  
density and diversity of fusarium populations
- 651 Calibration of the  $^{32}\text{P}$  bioassay for eucalypt roots in the field

*Short Communications*

T. W. Willison, J. C. Baker,  
D. V. Murphy and K. W. T. Goulding

Karen D. Burkhead,  
Patricia J. Slininger and  
David A. Schisler

C. A. Engelkes and D. R. Fravel

P. R. Herron, I. K. Toth,  
G. H. J. Heilig, A. D. L. Akkermans,  
A. Karagouni and  
E. M. H. Wellington

661 Comparison of a wet and dry  $^{15}\text{N}$  isotopic dilution technique as a short-term nitrification assay

665 Biological control bacterium *Enterobacter cloacae* S11:T:07 (NRRL B-21050) produces the antifungal compound phenylacetic acid in Sabouraud maltose broth culture

669 Procedure for electrophoretic analysis of proteins from metham sodium-treated microsclerotia of *Verticillium dahliae*

673 Selective effect of antibiotics on survival and gene transfer of streptomycetes in soil

*Volume 30 Number 6*

R. M. Zablotowicz, R. E. Hoagland  
and S. C. Wagner

Hannu Fritze, Taina Pennanen and  
Veikko Kitunen

H. Pathak and D. L. N. Rao

Bernhard Mogge,  
Ernst-August Kaiser and  
Jean-Charles Munch

G. Cuenca, Z. De Andrade and  
G. Escalante

A. Fioretto, A. Musacchio,  
G. Andolfi and A. Virzo De Santo

Inger Bergman, Bo H. Svensson and  
Mats Nilsson

C. J. Watson and C. L. Mills

G. Almendros, M. E. Guadalix,  
F. J. González-Vila and F. Martin

C. R. Alvarez, R. Alvarez,  
M. S. Grigera and R. S. Lavado

Laura Paavolainen and  
Aino Smolander

J. Cortez

J. Cortez and M. B. Bouché

N. Gunapala and K. M. Scow

David Boyle

X. Zou and M. Bashkin

679 2-Nitroacetanilide as substrate for determination of aryl acylamidase activity in soils

687 Characterization of dissolved organic carbon from burned humus and its effects on microbial activity and community structure

702 Carbon and nitrogen mineralization from added organic matter in saline and alkali soils

703 Nitrous oxide emissions and denitrification N-losses from forest soils in the Bornhöved Lake region (Northern Germany).

711 Diversity of glomalean spores from natural, disturbed and revegetated communities growing on nutrient-poor tropical soils

721 Decomposition dynamics of litters of various pine species in a Corsican pine forest

729 Regulation of methane production in a Swedish acid mire by pH, temperature and substrate

743 Gross nitrogen transformations in grassland soils as affected by previous management intensity

755 Distribution of structural units in humic substances as revealed by multi-step selective degradations and  $^{13}\text{C}$ -NMR of successive residues

767 Associations between organic matter fractions and the active soil microbial biomass

781 Nitrification and denitrification in soil from a clear-cut Norway spruce (*Picea abies*) stand

783 Field decomposition of leaf litters: relationships between decomposition rates and soil moisture, soil temperature and earthworm activity

795 Field decomposition of leaf litters: earthworm-microorganism interactions—the ploughing-in effect

805 Dynamics of soil microbial biomass and activity in conventional and organic farming systems

817 Nutritional factors limiting the growth of *Lentinula edodes* and other white-rot fungi in wood

825 Soil carbon accretion and earthworm recovery following revegetation in abandoned sugarcane fields

*Short Communication*

Hee Woo Park, Ki Seok Koh and  
Soon Cheol Park

- 831 Molecular weights and inhibitor sensitivities of alkaline phosphatase isoenzymes from the midgut of the earthworm, *Eisenia andrei*

*Volume 30 Number 7*

Thomas E. Jordan, Donald E. Weller  
and David L. Correll

- 833 Denitrification in surface soils of a riparian forest: Effects of water, nitrate and sucrose additions

Bintoro Gunadi,  
Herman A. Verhoef and  
Jacques J. M. Bedaux

- 845 Seasonal dynamics of decomposition of coniferous leaf litter in a forest plantation (*Pinus merkusii*) in Central Java, Indonesia

J. A. Ashby, W. B. Bowden and  
P. S. Murdoch

- 853 Controls on denitrification in riparian soils in headwater catchments of a hardwood forest in the Catskill Mountains, U.S.A.

Hasta Pratopo Lukito, Kenji Kouno  
and Tadao Ando

- 865 Phosphorus requirements of microbial biomass in a regosol and an andosol

David Boyle, Charles Wiesner and  
Andrew Richardson

- 873 Factors affecting the degradation of polyaromatic hydrocarbons in soil by white-rot fungi

R. F. Grant

- 883 Simulation of methanogenesis in the mathematical model *ecosys*

J. Luo, R. W. Tillman, R. E. White  
and P. R. Ball

- 897 Variation in denitrification activity with soil depth under pasture

J. D. Jastrow, R. M. Miller and  
J. Lussenhop

- 905 Contributions of interacting biological mechanisms to soil aggregate stabilization in restored prairie

Zhenli He and Jun Zhu

- 917 Microbial utilization and transformation of phosphate adsorbed by variable charge minerals

J. Hallmann, A. Quadt-Hallmann,  
R. Rodríguez-Kábana and  
J. W. Kloepper

- 925 Interactions between *Meloidogyne incognita* and endophytic bacteria in cotton and cucumber

M. Shishido and C. P. Chanway

- 939 Storage effects on indigenous soil microbial communities and PGPR efficacy

R. C. Venette and H. Ferris

- 949 Influence of bacterial type and density on population growth of bacterial-feeding nematodes

Daniel L. Kelting, James A. Burger  
and Gerry S. Edwards

- 961 Estimating root respiration, microbial respiration in the rhizosphere, and root-free soil respiration in forest soils

*Short Communication*

W.-R. Knauber, A. J. Krotzky and  
B. Schink

- 969 Gradient gel electrophoretic characterization of humic substances and of bound residues of the herbicide bentazon

*Volume 30 Number 8/9*

Sung Ok Han and Peter B. New

- 975 Isolation of *Azospirillum* spp. from natural soils by immunomagnetic separation

D. W. Cullen and P. R. Hirsch

- 983 Simple and rapid method for direct extraction of microbial DNA from soil for PCR

Kil Yong Kim, D. Jordan  
and G. A. McDonald

- 995 *Enterobacter agglomerans*, phosphate solubilizing bacteria, and microbial activity in soil: Effect of carbon sources

F. Camiña, C. Trasar-Cepeda,  
F. Gil-Sotres and C. Leirós

- 1005 Measurement of dehydrogenase activity in acid soils rich in organic matter

S. J. Chapman and M. Thurlow

- 1013 Peat respiration at low temperatures

S. X. Chang and C. M. Preston

- 1023 Incorporation and extractability of residual <sup>15</sup>N in a coniferous forest soil



- Angela Hodge, Eric Paterson,  
Susan J. Grayston,  
Colin D. Campbell, Brian G. Ord  
and Kenneth Killham
- Jeanine L. Kay-Shoemake,  
Mary E. Watwood, Rodrick D. Lentz  
and Robert E. Sojka
- P. V. Ajithkumar, K. P. Gangadhara,  
P. Manilal and A. A. M. Kunhi
- C. Crecchio and G. Stotzky
- Karin Ahlich, Daniel Rigling,  
Ottmar Holdenrieder  
and Thomas N. Sieber
- J. Bauhus, D. Paré and L. Côté
- Benny Chefetz, Zohar Kerem,  
Yona Chen and Yitzhak Hadar
- M. S. Coyne, Q. Zhai,  
C. T. MacKown and R. I. Barnhisel
- R. Segers and S. W. M. Kengen
- R. J. Stevens, R. J. Laughlin and  
J. P. Malone
- Jay Gullledge and Joshua P. Schimel
- Z. Q. An, B. Z. Guo and  
J. W. Hendrix
- B. A. Byzov, V. N. Thanh,  
I. P. Bab'eva, E. B. Tretyakova,  
I. A. Dyvak and Ya. M. Rabinovich
- R. P. Griffiths, P. S. Homann and  
R. Riley
- Nicholas V. Coleman,  
Darryl R. Nelson and  
Trevor Duxbury
- Wendy L. Goodfriend
- V. O. Biederbeck, C. A. Campbell,  
V. Rasiyah, R. P. Zentner  
and Guang Wen
- Sigmund Jensen and  
Rolf Arnt Olsen
- Short Communications*  
Martin B. Dickman and Ilian Chet
- A. Muscolo, S. Cutrupi and S. Nardi
- Andrew S. Ball and Bert G. Drake
- 1033 Characterisation and microbial utilisation of exudate material from the rhizosphere of *Lolium perenne* grown under CO<sub>2</sub> enrichment
- 1045 Polyacrylamide as an organic nitrogen source for soil microorganisms with potential effects on inorganic soil nitrogen in agricultural soil
- 1053 Soil inoculation with *Pseudomonas aeruginosa* 3mT eliminates the inhibitory effect of 3-chloro- and 4-chlorobenzoate on tomato seed germination
- 1061 Binding of DNA on humic acids: Effect on transformation of *Bacillus subtilis* and resistance to DNase
- 1069 Dark septate hyphomycetes in swiss conifer forest soils surveyed using Norway-spruce seedlings as bait
- 1077 Effects of tree species, stand age and soil type on soil microbial biomass and its activity in a southern boreal forest
- 1091 Isolation and partial characterization of laccase from a thermophilic composted municipal solid waste
- 1099 Gross nitrogen transformation rates in soil at a surface coal mine site reclaimed for prime farmland use
- 1107 Methane production as a function of anaerobic carbon mineralization: A process model
- 1119 Soil pH affects the processes reducing nitrate to nitrous oxide and di-nitrogen
- 1127 Moisture control over atmospheric CH<sub>4</sub> consumption and CO<sub>2</sub> production in diverse Alaskan soils
- 1133 Viability of soilborne spores of glomalean mycorrhizal fungi
- 1137 Killing and hydrolytic activities of the gut fluid of the millipede *Pachyiulus flavipes* C.L. Koch on yeast cells
- 1147 Denitrification enzyme activity of Douglas-fir and red alder forest soils of the Pacific Northwest
- 1159 Aerobic biodegradation of hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) as a nitrogen source by a *Rhodococcus* sp., strain DN22
- 1169 Microbial community patterns of potential substrate utilization: a comparison of salt marsh, sand dune, and seawater-irrigated agronomic systems
- 1177 Soil quality attributes as influenced by annual legumes used as green manure
- 1187 Atmospheric methane consumption in adjacent arable and forest soil systems
- 1195 Biodegradation of oxalic acid: A potential new approach to biological control
- 1199 IAA detection in humic substances
- 1203 Stimulation of soil respiration by carbon dioxide enrichment of marsh vegetation

- Pete Falloon, Pete Smith,  
Kevin Coleman and  
Stewart Marshall 1207 Estimating the size of the inert organic matter pool from total soil organic carbon content for use in the Rothamsted carbon model
- O. Roger Anderson and  
P. J. Bohlen 1213 Abundances and diversity of gymnamoebae associated with earthworm (*Lumbricus terrestris*) middens in a northeastern U.S. forest
- K. Annapurna and Y. D. Gaur 1217 Antigenic diversity amongst strains of *Azospirillum* from an Indian soil and their host specificity
- J. L. Chotte, J. N. Ladd and  
M. Amato 1221 Measurement of biomass C, N and  $^{14}\text{C}$  of a soil at different water contents using a fumigation-extraction assay
- Yoav Bashan and Gina Holguin 1225 Proposal for the division of plant growth-promoting rhizobacteria into two classifications: biocontrol-PGPB (plant growth-promoting bacteria) and PGPB

### Volume 30 Number 10/11

- I. M. Young and K. Ritz 1229 Can there be a contemporary ecological dimension to soil biology without a habitat?
- Stewart F. Ledgard, Steve C. Jarvis  
and David J. Hatch 1233 Short-term nitrogen fluxes in grassland soils under different long-term nitrogen management regimes
- A. M. Jackson and A. S. Ball 1243 Importance of environmental factors on the growth of *Thermoactinomyces thalophilus*
- P. S. J. Verburg, A. Gorissen and  
W. J. Arp 1251 Carbon allocation and decomposition of root-derived organic matter in a plant-soil system of *Calluna vulgaris* as affected by elevated  $\text{CO}_2$
- K. H. Söderberg and E. Bååth 1259 Bacterial activity along a young barley root measured by the thymidine and leucine incorporation techniques
- Evgenia V. Blagodatskaya and  
Traute-Heidi Anderson 1269 Interactive effects of pH and substrate quality on the fungal-to-bacterial ratio and  $\text{qCO}_2$  of microbial communities in forest soils
- P. Marschner and D. E. Crowley 1275 Phytosiderophores decrease iron stress and pyoverdine production of *Pseudomonas fluorescens* PF-5 (*pvd-inaZ*)
- C. Ehaliotis, G. Cadisch  
and K. E. Giller 1281 Substrate amendments can alter microbial dynamics and N availability from maize residues to subsequent crops
- T. H. De Luca 1293 Relationship of 0.5 M  $\text{K}_2\text{SO}_4$  extractable anthrone-reactive carbon to indices of microbial activity in forest soils
- A. J. Midwood and T. W. Boutton 1301 Soil carbonate decomposition by acid has little effect on  $\delta^{13}\text{C}$  of organic matter
- B. Grisi, C. Grace, P. C. Brookes,  
A. Benedetti and M. T. Dell'abate 1309 Temperature effects on organic matter and microbial biomass dynamics in temperate and tropical soils
- P. Bagnasco, L. De La Fuente,  
G. Gualtieri, F. Noya and A. Arias 1317 Fluorescent *Pseudomonas* spp. as biocontrol agents against forage legume root pathogenic fungi
- P. F. Grierson, N. B. Comerford  
and E. J. Jokela 1323 Phosphorus mineralization kinetics and response of microbial phosphorus to drying and rewetting in a Florida Spodosol
- Berit Swensen and Lars R. Bakken 1333 Nitrification potential and urease activity in a mineral subsoil
- Flemming Ekelund 1343 Enumeration and abundance of mycophagous protozoa in soil, with special emphasis on heterotrophic flagellates
- Antonio Gallardo and José Merino 1349 Soil nitrogen dynamics in response to carbon increase in a mediterranean shrubland of SW Spain
- R. M. Mohr, H. H. Janzen,  
E. Bremer and M. H. Entz 1359 Fate of symbiotically-fixed  $^{15}\text{N}_2$  as influenced by method of alfalfa termination



- L. Tessier, E. G. Gregorich and E. Topp** 1369 Spatial variability of soil microbial biomass measured by the fumigation extraction method, and  $K_{EC}$  as affected by depth and manure application
- B. S. Griffiths, R. E. Wheatley, T. Olesen, K. Henriksen, F. Ekelund and R. Rønn** 1379 Dynamics of nematodes and protozoa following the experimental addition of cattle or pig slurry to soil
- Ken E. Giller, Ernst Witter and Steve P. McGrath** 1389 Toxicity of heavy metals to microorganisms and microbial processes in agricultural soils: a review
- P. F. Schweiger and I. Jakobsen** 1415 Dose-response relationships between four pesticides and phosphorus uptake by hyphae of arbuscular mycorrhizas
- Gunnar Börjesson, Ingvar Sundh, Anders Tunlid and Bo H. Svensson** 1423 Methane oxidation in landfill cover soils, as revealed by potential oxidation measurements and phospholipid fatty acid analyses
- Murray J. Unkovich and John S. Pate** 1435 Symbiotic effectiveness and tolerance to early season nitrate in indigenous populations of subterranean clover rhizobia from S.W. Australian pastures
- Thomas Appel** 1445 Non-biomass soil organic N—the substrate for N mineralization flushes following soil drying–rewetting and for organic N rendered  $CaCl_2$ -extractable upon soil drying
- M. B. Aberra, S. Seah and K. Sivasithamparam** 1457 Suppression of the take-all fungus (*Gaeumannomyces graminis* var. *tritici*) by a sterile red fungus through induced resistance in wheat (*Triticum aestivum*) seedling roots
- Jay Gulledge, Paul A. Steudler and Joshua P. Schimel** 1463 Effect of  $CH_4$ -starvation on atmospheric  $CH_4$  oxidizers in Taiga and temperate forest soils
- Short Communications*
- G. Sparling, Maja Vojvodić-Vuković and L. A. Schipper** 1469 Hot-water-soluble C as a simple measure of labile soil organic matter: the relationship with microbial biomass C
- M. E. Aouani, R. Mhamdi, M. Mars and R. Ghrir** 1473 Nodulation and growth of common bean under NaCl-stress
- Sarah Hetherington and Jonathan M. Anderson** 1477 Simplified procedure for the characterisation of plant lignins by alkaline  $CuO$  oxidation
- E. Benizri, A. Courtade, C. Picard and A. Guckert** 1481 Role of maize root exudates in the production of auxins by *Pseudomonas fluorescens* M.3.1.

### Volume 30 Number 12

- Claudio Marzadori, Silvia Miletto, Carlo Gessa and Stefano Ciurli** 1485 Immobilization of jack bean urease on hydroxyapatite: urease immobilization in alkaline soils
- C. K. Smith, A. D. Munson and M. R. Coyea** 1491 Nitrogen and phosphorus release from humus and mineral soil under black spruce forests in central Quebec
- Rota Wagai, Kristofor R. Brye, Stith T. Gower, John M. Norman and Larry G. Bundy** 1501 Land use and environmental factors influencing soil surface  $CO_2$  flux and microbial biomass in natural and managed ecosystems in southern Wisconsin
- Samir Kumar Mukherjee and Shuichi Asanuma** 1511 Possible role of cellular phosphate pool and subsequent accumulation of inorganic phosphate on the aluminum tolerance in *Bradyrhizobium japonicum*
- Y. Huang, B. A. Stankiewicz, G. Eglinton, C. E. Snape, B. Evans, P. M. Latter and P. Ineson** 1517 Monitoring biomacromolecular degradation of *Calluna vulgaris* in a 23 year field experiment using solid state  $^{13}C$ -NMR and pyrolysis-GC/MS
- Timo Domisch, Leena Finér, Marjut Karsisto, Raija Laiho and Jukka Laine** 1529 Relocation of carbon from decaying litter in drained peat soils

- G. Geiger, H. Brandl, G. Furrer and R. Schulin 1537 The effect of copper on the activity of cellulase and  $\beta$ -glucosidase in the presence of montmorillonite or Al-montmorillonite
- Johannes Lehmann, Ninkabou Poidy, Götz Schroth and Wolfgang Zech 1545 Short-term effects of soil amendment with tree legume biomass on carbon and nitrogen in particle size separates in Central Togo
- E.-A. Kaiser, K. Kohrs, M. Kücke, E. Schnug, O. Heinemeyer and J. C. Munch 1553 Nitrous oxide release from arable soil: importance of N-fertilization, crops and temporal variation
- M. Francesca Cotrufo, María Jesús I. Briones and Phil Ineson 1565 Elevated CO<sub>2</sub> affects field decomposition rate and palatability of tree leaf litter: importance of changes in substrate quality
- V. Riis, H. Lorbeer and W. Babel 1573 Extraction of microorganisms from soil: evaluation of the efficiency by counting methods and activity measurements
- Lynne F. Whitehead, Susan Young and David A. Day 1583 Aspartate and alanine movement across symbiotic membranes of soybean nodules
- Richard D. Bowden, Kathleen M. Newkirk and Gina M. Rullo 1591 Carbon dioxide and methane fluxes by a forest soil under laboratory-controlled moisture and temperature conditions
- N. Nunan, M. A. Morgan and M. Herlihy 1599 Ultraviolet absorbance (280 nm) of compounds released from soil during chloroform fumigation as an estimate of the microbial biomass
- M. Soedarjo and D. Borthakur 1605 Mimosine, a toxin produced by the tree-legume *Leucaena* provides a nodulation competition advantage to mimosine-degrading *Rhizobium* strains
- Short Communications*
- Rock Chabot, Chantal J. Beauchamp, Joseph W. Kloepper and Hani Antoun 1615 Effect of phosphorus on root colonization and growth promotion of maize by bioluminescent mutants of phosphate-solubilizing *Rhizobium leguminosarum* biovar *phaseoli*
- Gamini Seneviratne and L. H. J. van Holm 1619 CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions from a wetted tropical upland soil following surface mulch application
- S. L. Rogers, S. M. Froscio, R. S. Kookana and D. P. Oliver 1623 Degradation of strychnine by pure bacterial cultures isolated from South Australian agricultural soils

### Volume 30 Number 13

#### Review

- David A. Wardle 1627 Controls of temporal variability of the soil microbial biomass: a global-scale synthesis
- Ben G. McMillen, Sato Juniper and L. K. Abbott 1639 Inhibition of hyphal growth of a vesicular-arbuscular mycorrhizal fungus in soil containing sodium chloride limits the spread of infection from spores
- Jeanine L. Kay-Shoemaker, Mary E. Watwood, Robert E. Sojka and Rodrick D. Lentz 1647 Polyacrylamide as a substrate for microbial amidase in culture and soil
- O. Mario Aguilar, D. H. Grasso, P. M. Riccillo, M. V. López and E. Szafer 1655 Rapid identification of bean *Rhizobium* isolates by a *nifH* gene-PCR assay
- Danilo Lopez-Hernandez, M. Brossard and E. Frossard 1663 P-isotopic exchange values in relation to Po mineralisation in soils with very low P-sorbing capacities
- A. N. Ganeshamurthy, K. M. Manjaiah and A. Subba Rao 1671 Mobilization of nutrients in tropical soils through worm casting: availability of macronutrients
- Thais Winsome and John G. McColl 1677 Changes in chemistry and aggregation of a California forest soil worked by the earthworm *Argilophilus papillifer* Eisen (Megascolecidae)

- D. P. C. Stewart, K. C. Cameron and I. S. Cornforth 1689 Inorganic-N release from spent mushroom compost under laboratory and field conditions
- George G. Brown, Paul F. Hendrix and Michael H. Beare 1701 Earthworms (*Lumbricus rubellus*) and the fate of  $^{15}\text{N}$  in surface-applied Sorghum residues
- E. S. P. Bromfield, A. M. P. Behara, R. S. Singh and L. R. Barran 1707 Genetic variation in local populations of *Sinorhizobium meliloti*
- Steven D. Siciliano and James J. Germida 1717 Biolog analysis and fatty acid methyl ester profiles indicate that pseudomonad inoculants that promote phytoremediation alter the root-associated microbial community of *Bromus biebersteinii*
- C. Strehl and J. Prietzel 1725 Method for the partitioning of organic sulphur in forest soil O layers
- N. Z. Lupwayi, W. A. Rice and G. W. Clayton 1733 Soil microbial diversity and community structure under wheat as influenced by tillage and crop rotation
- S. A. Blagodatsky and O. Richter 1743 Microbial growth in soil and nitrogen turnover: a theoretical model considering the activity state of microorganisms
- S. A. Blagodatsky, I. V. Yevdokimov, A. A. Larionova and J. Richter 1757 Microbial growth in soil and nitrogen turnover: model calibration with laboratory data
- C. L. Douglas Jr., P. E. Rasmussen, H. P. Collins and S. L. Albrecht 1765 Nitrogen mineralization across a climosequence in the Pacific Northwest
- R. Neilson, D. Hamilton, J. Wishart, C. A. Marriott, B. Boag, L. L. Handley, C. M. Scrimgeour, J. W. McNicol and D. Robinson 1773 Stable isotope natural abundances of soil, plants and soil invertebrates in an upland pasture
- M. Brzezińska, Z. Stępniewska and W. Stępniewski 1783 Soil oxygen status and dehydrogenase activity
- R. T. Aggangan, A. M. O'Connell, J. F. McGrath and B. Dell 1791 Fertilizer and previous land use effects on C and N mineralization in soils from *Eucalyptus globulus* plantations
- Yuc-P. Hsieh, Chou-Her Yang and Jinan Feng 1799 Sulfate reduction and a molybdate-induced soluble nitrogen flush in sediments during incubation
- Frank Schönholzer, Lukas Kohli, Dittmar Hahn, Otto Daniel, Christiane Goetz and Josef Zeyer 1805 Effects of decomposition of leaves on bacterial biomass and on palatability to *Lumbricus terrestris* L.
- F. S. Hay, J. H. Niezen, L. Bateson and S. Wilson 1815 Invasion of sheep dung by nematophagous fungi and soil nematodes on a hill country pasture in New Zealand
- Paul Gibbs and Declan Barraclough 1821 Gross mineralisation of nitrogen during the decomposition of leaf protein I (ribulose 1,5-diphosphate carboxylase) in the presence or absence of sucrose
- P. E. Rasmussen, C. L. Douglas Jr., H. P. Collins and S. L. Albrecht 1829 Long-term cropping system effects on mineralizable nitrogen in soil
- Short Communications*
- A. N. Ganeshamurthy, K. M. Manjaiah and A. Subba Rao 1839 Mobilization of nutrients in tropical soils through worm casting: availability of micronutrients
- Shuijin Hu and Ariena H. C. Van Bruggen 1841 Efficiencies of chloroform fumigation in soil: effects of physiological states of bacteria
- C. Varela-Castejón, B. González-Penalta, A. Vilariño and M. J. Sainz 1845 Fluorescent light inhibits the germination of propagules of the arbuscular mycorrhizal fungus *Glomus macrocarpum*
- R. Dwivedi 1849 Soil solarization and the survival of two fungal pathogens of sugarcane and the composition of the soil fungal community
- S. F. Wright, A. Upadhyaya and J. S. Buyer 1853 Comparison of N-linked oligosaccharides of glomalin from arbuscular mycorrhizal fungi and soils by capillary electrophoresis



Volume 30 Number 14

Accelerated Paper

Manuela Röver, Otto Heinemeyer  
and Ernst-August Kaiser

- 1859 Microbial induced nitrous oxide emissions from an arable soil during winter

Review

Richard D. Bardgett,  
David A. Wardle and  
Gregor W. Yeates

- 1867 Linking above-ground and below-ground interactions: how plant responses to foliar herbivory influence soil organisms

D. Kelly Cartwright and  
H. W. Spurr Jr.

- 1879 Biological control of *Phytophthora parasitica* var. *nicotianae* on tobacco seedlings with non-pathogenic binucleate *Rhizoctonia* fungi

P. H. Williams, S. C. Jarvis  
and E. Dixon

- 1885 Emission of nitric oxide and nitrous oxide from soil under field and laboratory conditions

D. L. Jones and A. C. Edwards

- 1895 Influence of sorption on the biological utilization of two simple carbon substrates

Bettina Gilbert and Peter Frenzel

- 1903 Rice roots and CH<sub>4</sub> oxidation: the activity of bacteria, their distribution and the microenvironment

N. Gunapala, R. C. Venette,  
H. Ferris and K. M. Scow

- 1917 Effects of soil management history on the rate of organic matter decomposition

Roger H. Williams, John M. Whipps  
and Roderic C. Cooke

- 1929 Role of soil mesofauna in dispersal of *Coniothyrium minitans*: transmission to sclerotia of *Sclerotinia sclerotiorum*

R. H. Williams, J. M. Whipps and  
R. C. Cooke

- 1937 Role of soil mesofauna in dispersal of *Coniothyrium minitans*: mechanisms of transmission

H. G. M. Edwards, J. M. Holder and  
D. D. Wynn-Williams

- 1947 Comparative FT-Raman spectroscopy of *Xanthoria* lichen-substratum systems from temperate and Antarctic habitats

Moeen Abu Hatab, Robin J. Stuart  
and Randy Gaugler

- 1955 Antibiotic resistance and protease production by *Photobacterium luminescens* and *Xenorhabdus poinarii* bacteria symbiotic with entomopathogenic nematodes variation among species and strains

B. Mary, S. Recous and D. Robin

- 1963 A model for calculating nitrogen fluxes in soil using <sup>15</sup>N tracing

Bradley P. Degens

- 1981 Microbial functional diversity can be influenced by the addition of simple organic substrates to soil

B. P. Degens

- 1989 Decreases in microbial functional diversity do not result in corresponding changes in decomposition under different moisture conditions

M. C. Rillig and M. F. Allen

- 2001 Arbuscular mycorrhizae of *Gutierrezia sarothrae* and elevated carbon dioxide: evidence for shifts in C allocation to and within the mycobiont

R. W. O'Dowd and D. W. Hopkins

- 2009 Mineralization of carbon from D- and L-amino acids and D-glucose in two contrasting soils

A. Lomander, T. Kätterer and  
O. Andrén

- 2017 Carbon dioxide evolution from top- and subsoil as affected by moisture and constant and fluctuating temperature

A. Lomander, T. Kätterer and  
O. Andrén

- 2023 Modelling the effects of temperature and moisture on CO<sub>2</sub> evolution from top- and subsoil using a multi-compartment approach

Lars Vesterdal

- 2031 Potential microbial nitrogen and phosphorus availability in forest floors

H. Amir and R. Pineau

- 2043 Effects of metals on the germination and growth of fungal isolates from New Caledonian ultramafic soils

Gary D. Bending, Mary K. Turner  
and Ian G. Burns

- 2055 Fate of nitrogen from crop residues as affected by biochemical quality and the microbial biomass

S. de Neve and G. Hofman

- 2067 N mineralization and nitrate leaching from vegetable crop residues under field conditions: a model evaluation

<b>R. D. Lovell and S. C. Jarvis</b>	2077	Soil microbial biomass and activity in soil from different grassland management treatments stored under controlled conditions
<b>A. R. Mosier, J. A. Delgado and M. Keller</b>	2087	Methane and nitrous oxide fluxes in an acid Oxisol in western Puerto Rico: effects of tillage, liming and fertilization
<b>Segundo Urquiaga, Georg Cadisch, Bruno J. R. Alves, Robert M. Boddey and Ken E. Giller</b>	2099	Influence of decomposition of roots of tropical forage species on the availability of soil nitrogen
<b>C. Fang and J. B. Moncrieff</b>	2107	Simple and fast technique to measure CO <sub>2</sub> profiles in soil
<b>M. Bonmati, B. Ceccanti and P. Nannipieri</b>	2113	Protease extraction from soil by sodium pyrophosphate and chemical characterization of the extracts
<b>D. M. Goodman and J. A. Trofymow</b>	2127	Distribution of ectomycorrhizas in micro-habitats in mature and old-growth stands of Douglas-fir on southeastern Vancouver Island
<b>V. P. Yakovchenko, L. J. Sikora and P. D. Millner</b>	2139	Carbon and nitrogen mineralization of added particulate and macroorganic matter
<b>Sabine Houot, Enrique Barriuso and Valérie Bergheaud</b>	2147	Modifications to atrazine degradation pathways in a loamy soil after addition of organic amendments
<b>C. K. Smith, H. L. Gholz and F. de Assis Oliveira</b>	2159	Fine litter chemistry, early-stage decay, and nitrogen dynamics under plantations and primary forest in Lowland Amazonia
<i>Short Communications</i>		
<b>F. S. Ali, T. E. Loynachan, A. M. M. Hammad and Y. Aharchi</b>	2171	Polyvirulent rhizobiophage from a soybean rhizosphere soil
<b>P. Rowell, W. James, W. L. Smith, L. L. Handley and C. M. Scrimgeour</b>	2177	<sup>15</sup> N discrimination in molybdenum- and vanadium-grown N <sub>2</sub> -fixing <i>Anabaena variabilis</i> and <i>Azotobacter vinelandii</i>
<b>J. R. Hirth, B. M. McKenzie and J. M. Tisdall</b>	2181	Roots of perennial ryegrass ( <i>Lolium perenne</i> ) influence the burrowing of the endogeic earthworm, <i>Aporrectodea rosea</i>
<b>Zahir Ahmad Zahir and Muhammad Arshad</b>	2185	Response of <i>Brassica carinata</i> and <i>Lens culinaris</i> to the ethylene precursors L-methionine and 1-aminocyclopropane-1-carboxylic acid
<b>Erratum</b>	2189	

